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Joint Claim Chart

Microsoft Press
**Computer
Dictionary**

Third Edition

Microsoft Press

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broadcast

simultaneously over multiple transmission channels that are distinguished by frequency. A broadband network is capable of high-speed operation (20 megabits or more), but it is more expensive than a baseband network and can be difficult to install. Such a network is based on the same technology used by cable television (CATV). Also called wideband transmission. *Compare* baseband network.

broadcast¹ \brɒd'kɑːst\ *adj.* Sent to more than one recipient. In communications and on networks, a broadcast message is one distributed to all stations. *See also* e-mail¹ (definition 1).

broadcast² \brɒd'kɑːst\ *n.* As in radio or television, a transmission sent to more than one recipient.

broadcast storm \brɒd'kɑːst stɔːm\ *n.* A network broadcast that causes multiple hosts to respond simultaneously, overloading the network. A broadcast storm may occur when old TCP/IP routers are mixed with routers that support a new protocol. Also called network meltdown. *See also* communications protocol, router, TCP/IP.

Brouter \brɒʊ'tɔː, brɔː'tɔː\ *n.* *See* bridge router.

brownout \braʊn'out\ *n.* A condition in which the electricity level is appreciably reduced for a sustained period of time. In contrast to a blackout, or total loss of power, a brownout continues the flow of electricity to all devices connected to electrical outlets, although at lower levels than the normally supplied levels (120 volts in the United States). A brownout can be extremely damaging to

sensitive electronic devices, such as computers, because the reduced and often fluctuating voltage levels can cause components to operate for extended periods of time outside the range they were designed to work in. On a computer, a brownout is characterized by a smaller, dimmer, and somewhat fluctuating display area on the monitor and potentially erratic behavior by the system unit. The only reliable means of preventing damage caused by a brownout condition is to use a battery-backed uninterruptible power supply (UPS). *See also* UPS. *Compare* blackout.

browse \braʊz\ *vb.* To scan a database, a list of files, or the Internet, either for a particular item or for anything that seems to be of interest. Generally, browsing implies observing, rather than changing, information. In unauthorized computer hacking, browsing is a (presumably) nondestructive means of finding out about an unknown computer after illegally gaining entry.

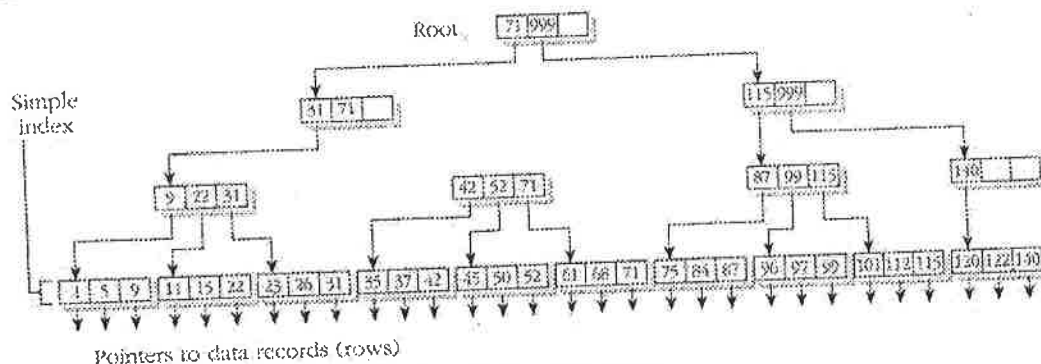
browser \braʊ'zɔː\ *n.* *See* Web browser.

browser box \braʊ'zɔː bɒks\ *n.* *See* Web TV.

BRS \B-R-S\ *n.* *See* big red switch.

brush \brʊʃ\ *n.* A tool used in paint programs to sketch or fill in areas of a drawing with the color and pattern currently in use. Paint programs that offer a variety of brush shapes can produce brushstrokes of varying width and, in some cases, shadowing or calligraphic effects.

.bs \dot B-S\ *n.* On the Internet, the major geographic domain specifying that an address is located in the Bahamas.



B-tree. A B-tree index structure.

hyperlink

hyperlink \hī'pər-lēnk\ *n.* A connection between an element in a hypertext document, such as a word, phrase, symbol, or image, and a different element in the document, another hypertext document, a file, or a script. The user activates the link by clicking on the linked element, which is usually underlined or in a color different from the rest of the document to indicate that the element is linked. Hyperlinks are indicated in a hypertext document through tags in markup languages such as SGML and HTML. These tags are generally not visible to the user. *Also called* hot link, hypertext link. *See also* anchor (definition 2), HTML, hypermedia, hypertext, URL.

hypermedia \hī'pər-mē'dē-ə\ *n.* The integration of any combination of text, graphics, sound, and video into a primarily associative system of information storage and retrieval in which users jump from subject to related subject in searching for information. Hypermedia attempts to offer a working and learning environment that parallels human thinking—that is, one in which the user can make associations between topics, rather than move sequentially from one to the next, as in an alphabetic list. For example, a hypermedia presentation on navigation might include links to astronomy, bird migration, geography, satellites, and radar. If the information is primarily in text form, it is regarded as hypertext; if video, music, animation, or other elements are included, the information is regarded as hypermedia. *See also* hypertext.

hyperspace \hī'pər-spēs\ *n.* The set of all documents that can be accessed by following hyperlinks in the World Wide Web. *Compare* cyber-space (definition 2), Gopherspace.

HyperTalk \hī'pər-tāk\ *n.* The programming language used to manipulate HyperCard stacks. *See also* HyperCard.

hypertext \hī'pər-tekst\ *n.* Text linked together in a complex, nonsequential web of associations in which the user can browse through related topics. For example, in an article with the word *iron*, traveling among the links to *iron* might lead the user to the periodic table of the elements or a map of the migration of metallurgy in Iron Age Europe. The term *hypertext* was coined in 1965 to describe documents presented by a computer that

hysteresis

express the nonlinear structure of ideas as opposed to the linear format of books, film, and speech. The term *hypermedia*, more recently introduced, is nearly synonymous but emphasizes the nontextual element, such as animation, recorded sound, and video. *See also* HyperCard, hypermedia.

hypertext link \hī'pər-tekst lēnk\ *n.* *See* hyperlink.

Hypertext Markup Language \hī'pər-tekst mār'k'up lang'waj\ *n.* *See* HTML.

Hypertext Transfer Protocol \hī'pər-tekst trans'fər prō'tə-kol\ *n.* *See* HTTP.

Hypertext Transfer Protocol Daemon \hī'pər-tekst trans'fər prō'tə-kol dē'mən\ *n.* *See* HTTPd.

Hypertext Transfer Protocol Next Generation \hī'pər-tekst trans'fər prō'tə-kol nekst' jen-ə-rā'shən\ *n.* *See* HTTP-NG.

HyperWave \hī'pər-wāv\ *n.* A World Wide Web server that specializes in database manipulation and multimedia.

hyphen \hī'fən\ *n.* A punctuation mark (-) used to break a word between syllables at the end of a line or to separate the parts of a compound word. Word processing programs with sophisticated hyphenation capabilities recognize three types of hyphens: normal, optional, and nonbreaking. Normal hyphens, also called *required* or *hard hyphens*, are part of a word's spelling and are always visible, as in *long-term*. Optional hyphens, also called *discretionary* or *soft hyphens*, appear only when a word is broken between syllables at the end of a line; they are usually supplied by the word processing program itself. Nonbreaking hyphens are always visible, like normal hyphens, but they do not allow a line break. *See also* hyphenation program.

hyphenation program \hī-fə-nā'shən prō'grām\ *n.* A program (often included as part of a word processing application) that introduces optional hyphens at line breaks. A good hyphenation program will avoid ending more than three lines in a row with hyphens and will prompt the user for confirmation or tag ambiguous breaks, as in the word *desert* (did the army de-sert in the des-ert?). *See also* hyphen.

hysteresis \hī'star-é'sis\ *n.* The tendency of a system, a device, or a circuit to behave differently

Mark I

frame a byte in asynchronous serial communications. **2.** A symbol that indicates a particular location on a display surface.

Mark I \mārk wəŋ\ *n.* **1.** An electromechanical calculating machine designed in the late 1930s and early 1940s by Howard Aiken of Harvard University and built by IBM. *Also called* Automatic Sequence Controlled Calculator, Harvard Mark I. **2.** The first fully electronic stored-program computer, designed and built at Manchester University in England. It successfully executed its first program in June 1948. **3.** The first commercial computer, which was based on the Manchester Mark I and released in 1951.

markup language \mār'kup lang'wəj\ *n.* A set of codes in a text file that instruct a computer how to format it on a printer or video display or how to index and link its contents. Examples of markup languages are Hypertext Markup Language (HTML), which is used in Web pages, and Standard Generalized Markup Language (SGML), which is used for typesetting and desktop publishing purposes and in electronic documents. Markup languages of this sort are designed to enable documents and other files to be platform-independent and highly portable between applications. *See also* HTML, SGML.

marquee \mār-kē\ *n.* A nonstandard HTML extension that causes scrolling text to appear as part of a Web page. Currently, marquees are viewable only with Internet Explorer. *See also* HTML, Internet Explorer, Web page.

mask \mask\ *n.* A binary value used to selectively screen out or let through certain bits in a data value. Masking is performed by using a logical operator (AND, OR, XOR, NOT) to combine the mask and the data value. For example, the mask 00111111, when used with the AND operator, removes (masks off) the two uppermost bits in a data value but does not affect the rest of the value. *See also* logical operator, mask bit.

11010101	Data value
AND 00111111	Mask
00010101	Resulting value

Mask. An example of a masking operation using the logical operator AND.

master key

maskable interrupt \ma'skə-bl in'ter-upt\ *n.* A hardware interrupt that can be temporarily disabled (masked) when a program needs the full attention of the microprocessor. *See also* external interrupt, hardware interrupt, interrupt. *Compare* nonmaskable interrupt.

mask bit \mask' bit\ *n.* A given bit within a mask whose function is to screen out or let through the corresponding bit in a data value when the mask is used in an expression with a logical operator. *See also* mask.

masking \ma'skēŋ\ *n.* The process of using the *mask* operation to perform operations on bits, bytes, or words of data. *See also* mask.

mask off \mask of\ *vb.* To use a mask to remove bits from a byte of data. *See also* mask.

massively parallel processing \mas'iv-lē pār'ə-ləl pros'es-ēŋ\ *n.* A computer architecture in which each of a large number of processors has its own RAM, which contains a copy of the operating system, a copy of the application code, and its own part of the data, on which that processor works independently of the others. *Acronym:* MPP (M'P-P'). *Compare* SMP.

massively parallel processor \mas'iv-lē pār'ə-ləl pros'es-ər\ *n.* A computer designed to perform massively parallel processing.

mass storage \mas' stōr-əj\ *n.* A generic term for disk, tape, or optical disc storage of computer data, so called for the large masses of data that can be stored in comparison with computer memory capacity. *Compare* memory.

master file \ma'stər fl\ *n.* In a set of database files, the file containing more or less permanent descriptive information about the principal subjects of the database, summary data, and one or more critical key fields. For example, customers' names, account numbers, addresses, and credit terms might be stored in a master file. *Compare* transaction file.

master key \ma'stər kē\ *n.* The server-based component of software or data protection. In some systems, data or applications are stored on a server and must be downloaded to the local machine for use. When a client requests the data, it presents a session key. If the session key supplied matches the master key, the key server sends

PackIT

storage device. Bits per inch is one measure of packing density.

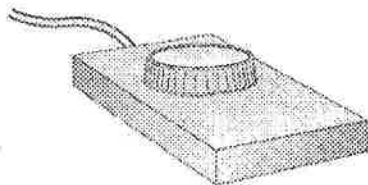
PackIT \pak'it\ *n.* A file format used on the Apple Macintosh to represent collections of Mac files, possibly Huffman compressed. *See also* Huffman coding, Macintosh.

PAD \P'A-D\ *n.* See packet assembler/disassembler.

pad character \pad' kâr'ak-tôr\ *n.* In data input and storage, an extra character inserted as filler to use up surplus space in a predefined block of a specified length, such as a fixed-length field.

padding \pad'ing\ *n.* In data storage, the addition of one or more bits, usually zeros, to a block of data in order to fill it, to force the actual data bits into a certain position, or to prevent the data from duplicating a bit pattern that has an established meaning, such as an embedded command.

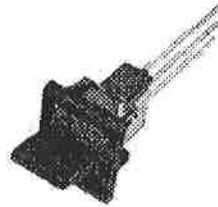
paddle \pad'l\ *n.* An early type of input device often used with computer games especially for side-to-side or up-and-down movements of an on-screen object. A paddle is less sophisticated than a joystick because it only permits the user, by turning a dial, to specify movement along a single axis. The paddle got its name because its most popular use was to control the on-screen paddles in the simple early video games, such as Pong. *See the illustration.*



Paddle.

paddle switch \pad'l swich\ *n.* Any switch that has a wide handle. The large on/off switch on many IBM personal computers is one type of paddle switch. *See the illustration.*

page \pāj\ *n.* **1.** In word processing, the text and display elements to be printed on one side of a sheet of paper, subject to formatting specifications such as depth, margin size, and number of columns. **2.** A fixed-size block of memory. When used in the context of a paging memory system, a

page-description language

Paddle switch.

page is a block of memory whose physical address can be changed via mapping hardware. *See also* EMS, memory management unit, virtual memory.

3. In computer graphics, a portion of display memory that contains one complete full-screen image; the internal representation of a screenful of information.

page break \pāj' brāk\ *n.* The point at which the flow of text in a document moves to the top of a new page. Most word processors automatically place page breaks when the material on the page reaches a specified maximum. By contrast, a "hard" or "manual" page break is a command or code inserted by the user to force a page break at a specific place in the text. *See also* form feed.

paged address \pājd' a'dres, ə-dres\ *n.* In the 80386, i486, and Pentium paged-memory architecture, an address in memory created by combining the processes of segment translation and page translation. In the paged-memory scheme, which requires that the microprocessor's paging feature be enabled, logical addresses are transformed into physical addresses in two steps: segment translation and page translation. The first step, segment translation, converts a logical to a linear address—an address that refers indirectly to a physical address. After the linear address is obtained, the microprocessor's paging hardware converts the linear address to a physical address by specifying a page table (an array of 32-bit page specifiers), a page (a 4-KB unit of contiguous addresses within physical memory) within that table, and an offset within that page. This information collectively refers to a physical address.

page-description language \pāj-da-skrip'shan lang'wə\ *n.* A programming language, such as PostScript, that is used to describe output to a printer or a display device, which then uses the

paged memory management unit

instructions from the page-description language to construct text and graphics to create the required page image. Page-description languages are like other computer languages, with logical program flow allowing for sophisticated manipulation of the output. A page-description language, like a blueprint, sets out specifications (as for fonts and type sizes) but leaves the work of drawing characters and graphics to the output device itself. Because this approach delegates the detail work to the device that produces the output, a page-description language is machine-independent. These abilities come at a price, however. Page-description languages require printers with processing power and memory comparable to, and often exceeding, that of personal computers. *Acronym:* PDI (P^rD-L^{ang}U^{age}). *See also* PostScript.

paged memory management unit \pājəd' mem-ər-ē man'əj-mənt yōō-nə\ *n.* A hardware unit that performs tasks related to accessing and managing memory used by different applications or by virtual-memory operating systems. *Acronym:* PMMU (P^rM-M-U^{nit}).

Page Down key \pāj daun' kē\ *n.* A standard key (often labeled "PgDn") on most computer keyboards whose specific meaning is different in different programs. In many cases, it moves the cursor down to the top of the next page or a specific number of lines. *See the illustration.*



Page Down key.

page fault \pāj' fəlt, fōlt\ *n.* The interrupt that occurs when software attempts to read from or write to a virtual memory location that is marked "not present." The mapping hardware of a virtual memory system maintains status information about every page in the virtual address space. A page either is mapped onto a physical address or

page orientation

is not present in physical memory. When a read or write to an unmapped virtual address is detected, the memory management hardware generates the page fault interrupt. The operating system must respond to the page fault by swapping in the data for the page and updating the status information in the memory management unit. *See also* page (definition 2), swap (definition 2), virtual memory.

page frame \pāj' frām\ *n.* A physical address to which a page of virtual memory may be mapped. In a system with 4,096-byte pages, page frame 0 corresponds to physical addresses 0 through 4,095. *See also* paging, virtual memory.

page-image buffer \pāj' im-əj buf'ər\ *n.* Memory in a page printer used to hold the bit map (image) of a page as the printer's raster image processor builds the page and as the printer produces the page. *See also* page printer, raster image processor.

page-image file \pāj' im-əj fil'\ *n.* A file containing the necessary code for a printer or other display device to create the page or screen image. *See also* PostScript.

page layout \pāj' lā'out\ *n.* In desktop publishing, the process of arranging text and graphics on the pages of a document. Page-layout programs excel in text placement and management of special effects applied to text. Although page-layout programs are generally slower than word-processing programs, they can perform such advanced tasks as flowing text into complex multicolumn page designs, printing documents in signatures, managing color separations, and supporting sophisticated kerning and hyphenation.

page makeup \pāj' mā'kup\ *n.* The assembling of graphics and text on a page in preparation for printing.

page mode RAM \pāj' mōd' ram', R-A-M'\ *n.* A specially designed dynamic RAM that supports access to sequential memory locations with a reduced cycle time. This is especially attractive in video RAM, where each location is accessed in ascending order to create the screen image. Page mode RAM can also improve the execution speed of code because code tends to execute sequentially through memory. *See also* cycle time, dynamic RAM.

page orientation \pāj' ōr-ē-on-tā'shən\ *n.* *See* landscape mode, portrait mode.

screen angle

for temporary data storage. *Also called* scratchpad, scratchpad memory. *See also* central processing unit, register.

screen angle \skrēn' ang'l\ *n.* The angle at which the dots in a halftone screen are printed. A correct angle will minimize blur and other undesirable effects, such as moiré patterns. *See also* color separation (definition 1), halftone, moiré.

screen buffer \skrēn' buf'ər\ *n.* *See* video buffer.

screen dump \skrēn' dʌmp\ *n.* A duplicate of a screen image; essentially, a "snapshot" of the screen that is either sent to a printer or saved as a file.

screen flicker \skrēn' flik'ər\ *n.* *See* flicker.

screen font \skrēn' fɒnt\ *n.* A typeface designed for display on a computer monitor screen. Screen fonts often have accompanying PostScript fonts for printing to PostScript-compatible printers. *See also* derived font, intrinsic font. *Compare* PostScript font, printer font.

screen frequency \skrēn' frē'kwəns-ē\ *n.* *See* halftone.

screen grabber \skrēn' grab'ər\ *n.* *See* grabber (definition 3).

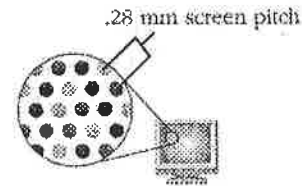
screen name \skrēn' nām\ *n.* A name under which an America Online user is known. The screen name may be the same as the user's real name. *See also* America Online.

screen phone \skrēn' fōn\ *n.* A type of Internet appliance combining a telephone with an LCD display screen, a digital fax modem, and a computer keyboard, with ports for a mouse, printer, and other peripheral devices. Screen phones can be used as regular telephones for voice communications and can also be used as terminals to gain access to the Internet and other online services.

screen pitch \skrēn' pich\ *n.* A measurement of a computer monitor's screen density, representing the distance between phosphors on the display. The lower the number, the more detail can be displayed clearly. For example, a .28-dot-pitch screen has better resolution than one with .32. *See the illustration. See also* phosphor.

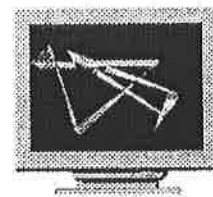
screen saver \skrēn' sā'vər\ *n.* A utility that causes a monitor to blank out or display a certain image after a specified amount of time passes without the keyboard being touched or the mouse being moved. Touching a key or moving the

script



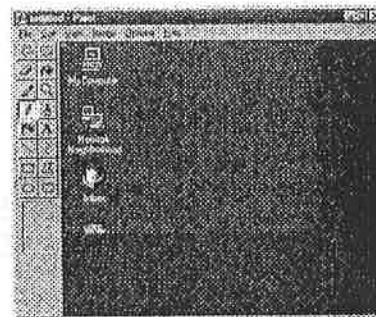
Screen pitch.

mouse deactivates the screen saver. Screen savers were originally used to prevent images from becoming permanently etched on a monitor's screen. Although modern monitors are not susceptible to this problem, screen savers remain popular for their decorative and entertainment value. *See the illustration.*



Screen saver.

screen shot \skrēn' shɒt\ *n.* An image that shows all or part of a computer display. The illustration shown here as well as the illustrations in this dictionary for the entries *alert box*, *cell*, and *menu bar*, for example, are screen shots.



Screen shot.

script \skript\ *n.* A program consisting of a set of instructions to an application or utility program.

scripting language

The instructions usually use the rules and syntax of the application or utility. *See also* macro.

scripting language \skrip'tēng lang'wəj\ *n.* A simple programming language designed to perform special or limited tasks, sometimes associated with a particular application or function. An example of a scripting language is Perl. *See also* Perl, script.

scroll \skrōl\ *vb.* To move a document or other data in a window in order to view a particular portion of the document. Scrolling may be controlled by the mouse, arrow keys, or other keys on the keyboard. *See also* scroll bar.

scroll arrow \skrōl' ā'ō\ *n.* *See* scroll bar.

scroll bar \skrōl' bār\ *n.* In some graphical user interfaces, a vertical or horizontal bar at the side or bottom of a display area that can be used with a mouse for moving around in that area. Scroll bars often have four active areas: two scroll arrows for moving line by line, a sliding scroll box for moving to an arbitrary location in the display area, and gray areas for moving in increments of one window at a time. *See* the illustration.

scroll box \skrōl' boks\ *n.* *See* elevator.

Scroll Lock key \skrōl' lok kē\ *n.* On the IBM PC/XT and AT and compatible keyboards, a key on the top row of the numeric keypad that controls the effect of the cursor control keys and sometimes prevents the screen from scrolling. On the enhanced and Macintosh keyboards, this key is to the right of the function keys on the top row. Many modern applications ignore the Scroll Lock setting.

SCSI \skuz'ē, S'C-S-I'\ *n.* Acronym for Small Computer System Interface, a standard high-speed parallel interface defined by the X3T9.2 committee of the American National Standards Institute (ANSI).

SCSI ID

A SCSI interface is used to connect microcomputers to SCSI peripheral devices, such as many hard disks and printers, and to other computers and local area networks. *Compare* ESDI, IDE.

SCSI-1 \skuz'ē-wōn', S'C-S-I'-wōn'\ *n.* *See* SCSI.

SCSI-2 \skuz'ē-tōō', S'C-S-I'-tōō'\ *n.* An enhanced ANSI standard for SCSI (Small Computer System Interface) buses. Compared with the original SCSI standard (now called SCSI-1), which can transfer data 8 bits at a time at up to 5 MB per second, SCSI-2 offers increased data width, increased speed, or both. A SCSI-2 disk drive or host adapter can work with SCSI-1 equipment at the older equipment's maximum speed. *See also* Fast SCSI, Fast/Wide SCSI, SCSI, Wide SCSI. *Compare* UltraSCSI.

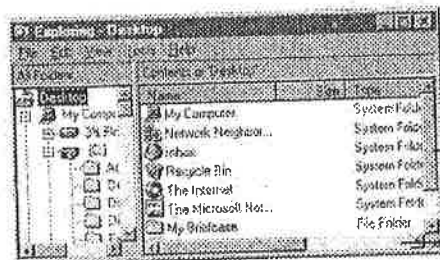
SCSI bus \skuz'ē bus, S'C-S-I'\ *n.* A parallel bus that carries data and control signals from SCSI devices to a SCSI controller. *See also* bus, controller, SCSI device.

SCSI chain \skuz'ē chān', S'C-S-I'\ *n.* A set of devices on a SCSI bus. Each device (except the host adapter and the last device) is connected to two other devices by two cables, forming a daisy chain. *See also* daisy chain, SCSI.

SCSI connector \skuz'ē ka-nek'tar, S'C-S-I'\ *n.* A cable connector used to connect a SCSI device to a SCSI bus. *See* the illustration on the next page. *See also* bus, connector (definition 1), SCSI device.

SCSI device \skuz'ē da-vīs', S'C-S-I'\ *n.* A peripheral device that uses the SCSI standard to exchange data and control signals with a computer's CPU. *See also* peripheral, SCSI.

SCSI ID \skuz'ē I-D' S'C-S-I'\ *n.* The unique identity of a SCSI device. Each device connected to a SCSI bus must have a different SCSI ID. A maxi-



Scroll bar.

.wav

.wav \dot W-A-V\ *n.* The file extension that identifies sound files stored in waveform (WAV) audio format. *See also* WAV.

WAV \wāv, W-A-V\ *n.* A file format in which Windows stores sounds as waveforms. Such files have the extension .wav. Depending on the sampling frequency, on whether the sound is monaural or stereo, and on whether 8 or 16 bits are used for each sample, one minute of sound can occupy as little as 644 kilobytes or as much as 27 megabytes of storage. *See also* sampling (definition 2), waveform.

wave \wāv\ *n.* 1. Any disturbance or change that has an oscillatory, periodic nature, for example, a light or sound wave. *See also* waveform. 2. In electronics, the time-amplitude profile of an electrical signal.

waveform \wāv'fōrm\ *n.* The manner in which a wave's amplitude changes over time. *See also* period, phase, wavelength.

wavelength \wāv'lenkth, wāv'length\ *n.* The distance between successive peaks or troughs in a periodic signal that is propagated through space. Wavelength is symbolized by the Greek letter lambda (λ) and can be calculated as speed divided by frequency.

wavelet \wāv'let\ *n.* A mathematical function that varies over a limited extent of time. Wavelets are coming into increasing use for analyzing signals (such as sound). They have limited duration and sudden changes in frequency and amplitude rather than the infinite duration and constant amplitude and frequency of the sine and cosine functions. *Compare* Fourier transform.

WBEM \W-B-E-M\ *n.* Acronym for **Web-Based Enterprise Management**. A protocol that links a Web browser directly to a device or application that monitors a network. *See also* communications protocol.

WDEF \W'D-E-F\ *n.* *See* window definition function.

WDL \W'D-L\ *n.* *See* Windows Driver Library.

weak typing \wēk' tī'pēng\ *n.* A characteristic of a programming language that allows the program to change the data type of a variable during program execution. *See also* data type, variable. *Compare* strong typing.

Webmaster

web \web\ *n.* A set of interlinked documents in a hypertext system. The user enters the web through a home page. *See also* World Wide Web.

Web \web\ *n.* *See* World Wide Web.

Web address \web' a'dres, ə-dres\ *n.* *See* URL.

Web-Based Enterprise Management \web'hāsd en'tər-prīz mən'ej-mənt\ *n.* *See* WBEM.

Web browser \web' brōw'zər\ *n.* A client application that enables a user to view HTML documents on the World Wide Web, another network, or the user's computer; follow the hyperlinks among them; and transfer files. Text-based Web browsers, such as Lynx, can serve users with shell accounts but show only the text elements of an HTML document; most Web browsers, however, require a connection that can handle IP packets but will also display graphics that are in the document, play audio and video files, and execute small programs, such as Java applets or ActiveX controls; that can be embedded in HTML documents. Some Web browsers require helper applications or plug-ins to accomplish one or more of these tasks. In addition, most current Web browsers permit users to send and receive e-mail and to read and respond to newsgroups. *Also called* browser. *See also* ActiveX controls, helper application, hyperlink, Internet Explorer, Java applet, Lynx, Mosaic, Netscape Navigator, plug-in.

WebCrawler \web'krā'lər, krō'lər\ *n.* A World Wide Web search engine operated by America Online. *See also* search engine.

Web development \web' de-vel'əp-mənt\ *n.* The design and coding of World Wide Web pages.

Web directory \web' dər-ek'tər-ē\ *n.* A list of Web sites, giving the URL and a description of each. *See also* URL.

Web index \web' in'deks\ *n.* A Web site intended to enable a user to locate other resources on the Web. The Web index may include a search facility or may merely contain individual hyperlinks to the resources indexed.

Webmaster or **webmaster** \web'ma'stər\ *n.* A person responsible for creating and maintaining a World Wide Web site. A Webmaster is often responsible for responding to e-mail, ensuring the site is operating properly, creating and updating Web pages, and maintaining the overall structure

**Trinity System Thermal Design
Change Summary**

Status as of 5/22/09

1

MS-MOTO_752_0000345636

MS-MOTO_1823_00000336229

CONFIDENTIAL BUSINESS INFORMATION,
SUBJECT TO PROTECTIVE ORDER

Problem Statement

- Two independent system level specification change requests have initiated a "new" system level thermal solution investigation.
- **Change 1:** Updated reliability data prompted request for lower than specified maximum operating temperatures for ODD/HDD.
 - Reduce the HDD external ambient spec from 60C to 50C.
 - 3 year FR is less than 0.74% @ 60C, 0.56% @ 55C, 0.53% @ 50C, 0.42% @ 45 C. HDD failure rate should be lower than 0.4% at ≤ 40 C
 - Reduce the ODD external ambient spec from 60 C to "C.
 - Reliability data here from RE team
- **Change 2:** Requirement for system to not go into thermal overload at 25C ambient environment with 100% vent blockage. (no associated acoustic specification for this condition)

Support of Current POR Design (History)

- Balancing the constraints of console form factor, (4.8mm Z axis reduction) Vejie Cooling during DVD movie at **55watts**, ODD max allowable temperature of 55C, HDD max allowable temperature of 60C and fan acoustics, the POR design solution of F92 with inlet air from the console top surface and exhaust air out console West side was determined to best meet these requirements.

Risks of Change to POR Thermal Solution

- FAN ACOUSTICS - Thermal/Acoustic data for the "new" fan exhaust solution assumes: a) Velle power in DVD move mode is now <35watts b) The reported fan acoustics is based on previously measured acoustic data of the 25 mm fan and the previous POR air flow direction, reversed direction air flow acoustics have not yet been measured. (scheduled for June 1st)
- New Design Validation Success (reported thermal results are from prototype only, design solution to be available for testing 5/27)
- Loss of air flow under mother board, impact unknown at this time.
- Schedule to support RE plan (requires change implementation in time to support EV3C build) (see stretch schedule)
- Slight impact to COGS, estimate \$.30 (assumes no CU slug added to Extrusion)
- Announce factor from 60C air exhaust from top of console.

"Stretch Goal Schedule"

- VeriStix, Inc.
- Mar 14th a) Complete Validation of Data Sources from all data providers (e.g., Time Off, Time In, etc.)
 - Mar 14th b) Review secondary data sources for data quality and identify any necessary modifications to data
 - Mar 23rd a) Complete Validation of Data Sources from all data providers (e.g., Time Off, Time In, etc.)
 - Mar 23rd b) Review secondary data sources for data quality and identify any necessary modifications to data
 - Mar 23rd c) Complete Validation of Data Sources from all data providers (e.g., Time Off, Time In, etc.)
 - Mar 23rd d) Review secondary data sources for data quality and identify any necessary modifications to data
 - Mar 23rd e) Complete Validation of Data Sources from all data providers (e.g., Time Off, Time In, etc.)
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 - Mar 23rd l) Review secondary data sources for data quality and identify any necessary modifications to data
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 - Mar 23rd n) Review secondary data sources for data quality and identify any necessary modifications to data
 - Mar 23rd o) Complete Validation of Data Sources from all data providers (e.g., Time Off, Time In, etc.)
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 - Mar 23rd x) Review secondary data sources for data quality and identify any necessary modifications to data
 - Mar 23rd y) Complete Validation of Data Sources from all data providers (e.g., Time Off, Time In, etc.)
 - Mar 23rd z) Review secondary data sources for data quality and identify any necessary modifications to data

Summary of Test Data

- **Justification for POR Thermal design change:**
- Change 2 : 100% Vent Blockage
- Fan PULL (Exhaust) direction of airflow is required to keep ODD within the spec <55C (by eliminating preheating)
- Fan PULL (Exhaust) direction keeps all MB components including ODD and HDD belows <55C under all ambient and blockage conditions with the POR fan set points prior to thermal shut down (at max power thermal shut down occurs at ~27C ambient with 100% vent blockage)
- Fan PULL (Exhaust) direction (no blocked vents) requires a 25mm thick fan . POR 15mm fan in reversed air flow condition does not have enough cooling capacity.
- **Relevant statements:**
- Fan PULL (Exhaust) direction with 25mm fan and secondary plenum will prevent thermal overload with 100% vent blockage at room temp of 25C , as now specified. (no acoustic specification associated with this requirement)
- Fan PULL (Exhaust) direction with 25mm fan and secondary plenum with 100% vent blockage the system will shut down at 40C ambient In 30 minutes and ODD temp stays <55C . (using Type A 25mm fan solution)

- Justification for POR Thermal design change:
- Change 1: ODD/HDD Reliability Budget Improvement
- We estimate that with 25mm fan and PULL airflow direction we meet the new ODD/DVD reliability thermal requirements and acoustic spec at room temp in DVD movie and Game Play mode. (to be confirmed 6/1)(assumes DVD movie mode is <35watts)
- We estimate that with 25mm fan and PULL airflow direction we still DO NOT meet acoustic spec at worst case ambient conditions – the same as for .15mm fan and PUSH airflow direction. This situation "could" be improved by adding cooling capacity to the heat sink (CU slug) (to be confirmed 6/1)
- If inlet blockage can be eliminated by changing ID, we can still use POR design and over cool Vejle to keep the ODD bottom case at <55C in low power DVD movie mode. (does not meet "new" reliability thermal budget requirements for ODD and HDD)

Thermal Comparison of different Solutions for two Power Levels.

- Reversing airflow from PUSH to PULL reduces OOD temps drastically

[illegible]

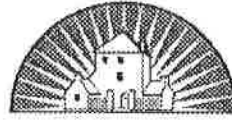
Thermal Comparison of different Solutions for two Power Levels.
(Continued, see above slide)

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Exhibit S

To

Joint Claim Chart



RANDOM HOUSE WEBSTER'S

COMPUTER
& INTERNET
DICTIONARY

Third Edition

Philip E. Margolis

Random House
New York

Random House Webster's Computer & Internet Dictionary, Third Edition

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hardwired

12 milliseconds or less. Many disk drives improve their performance through a technique called *caching*.

There are several interface standards for passing data between a hard disk and a computer. The most common are IDE and SCSI.

Hard disk drives are sometimes called *Winchester drives*, Winchester being the name of one of the first popular hard disk drive technologies, developed by IBM in 1973.

⇒ See also DISK COMPRESSION; DISK DRIVE; HARD DISK.

hard disk type A number that indicates important features of a hard disk, such as the number of platters and cylinders. However, the numbering scheme has broken down over the past few years and is no longer used by most disk drive manufacturers.

⇒ See also BIOS; HARD DISK.

hard drive Same as HARD DISK DRIVE.

hard hyphen See under HYPHENATION.

hard return A *return* is the process of jumping from the end of one line of text to the beginning of the next line. Word processors utilize two types of returns: *hard returns* and *soft returns*.

A hard return is an actual symbol inserted into the text. The hard-return symbol is usually invisible, but most word processors support a mode that lets you see them. Whenever you press the Return or Enter key while editing a document, the word processor inserts a hard return.

Hard returns cause the word processor to start a new line regardless of how margins are set. Therefore, if a document contains hard returns, the lines will end at the same place even if you change the margins. In contrast, soft returns, inserted by the program rather than by the user, depend on how the margins are set.

⇒ See also RETURN; SOFT RETURN.

hardware Refers to objects that you can actually touch, like disks, disk drives, display screens, keyboards, printers, boards, and chips. In contrast, software is untouchable. Software exists as ideas, concepts, and symbols, but it has no substance.

Books provide a useful analogy. The pages and the ink are the hardware, while the words, sentences, paragraphs, and the overall meaning are the software. A computer without software is like a book full of blank pages—you need software to make the computer useful just as you need words to make a book meaningful.

⇒ See also FIRMWARE; HARD; SOFTWARE.

hardwired Refers to elements of a program or device that cannot be changed. Originally, the term was used to describe functionality that was built into the circuitry (i.e., the wires) of a device. Nowadays, however,

IANA Short for *I*(nternet) *A*(ssigned) *N*(umbers) *A*(uthority), an organization working under the auspices of the Internet Architecture Board (IAB) that is responsible for assigning new Internet-wide IP addresses.

⇒ See also INTERNET ARCHITECTURE BOARD; IP ADDRESS.

I-beam pointer A pointer shaped like a capital I used in graphics-based text processing applications. Many desktop publishing systems and word processors use an I-beam pointer to mark blocks of text and move the insertion point. Note that the I-beam pointer is not the same as the selection pointer, which is usually shaped like an arrow.

⇒ See also INSERTION POINT; POINTER.

IBM Short for *I*(nternational) *B*(usiness) *M*(achines), the largest computer company in the world. IBM started in 1911 as a producer of punch card tabulating machines. In 1953, it introduced its first computer, the 701. During the 1960s and 1970s, IBM came to dominate the new field of mainframe and minicomputers. In 1981, IBM launched its first personal computer, called the *IBM PC*, which quickly became the standard. However, IBM underestimated the market for PCs and lost market share to vendors of PC compatibles, such as Compaq.

Over the past six or seven years, IBM has had to make some difficult adjustments as the market for mainframe computers has declined. While not the juggernaut it once was, IBM is still the most powerful company in the computer industry.

⇒ See also AS/400; COMPAQ; DEC; IBM PC; MAINFRAME; PC; SGI; SUN MICROSYSTEMS.

IBM compatible See under IBM PC.

IBM PC Refers to a family of personal computers produced by IBM. The term can also refer to computers that conform to set of loosely controlled standards. These are also called *IBM clones*, *IBM compatibles*, or simply compatibles. These terms are actually misnomers because many of the PCs produced by IBM do not conform to industry standards. For example, IBM attempted to change the expansion bus to MCA in its PS/2 line of PCs, but the industry did not follow suit.

⇒ See also COMPATIBLE; IBM; PC.

ICC See under SMART CARD.

ICMP Short for *I*(nternet) *C*(ontrol) *M*(essage) *P*(rotocol), an extension to the Internet Protocol (IP) defined by RFC 792. ICMP supports packets containing error, control, and informational messages. The PING command, for example, uses ICMP to test an Internet connection.

⇒ See also IP; PING.

icon A small picture that represents an object or program. Icons are very

useful in applications that use windows, because with the click of a mouse button you can shrink an entire window into a small icon. (This is sometimes called *minimizing*.) To redisplay the window, you merely move the pointer to the icon and click (or double click) a mouse button. (This is sometimes called *restoring* or *maximizing*.)

Icons are a principal feature of graphical user interfaces.

⇒ See also GRAPHICAL USER INTERFACE.

IDE 1. See under IDE INTERFACE. **2.** See under INTEGRATED DEVELOPMENT ENVIRONMENT.

⇒ See also APPLICATION; IDE INTERFACE; INTEGRATED; PROGRAMMING LANGUAGE; VISUAL C++.

IDE interface Abbreviation of either *I(ntelligent) D(rive) E(lectronics)* or *I(ntegrated) D(rive) E(lectronics)*, depending on whom you ask. An IDE interface is an interface for mass storage devices, in which the controller is integrated into the disk or CD-ROM drive.

Although it really refers to a general technology, most people use the term to refer the ATA specification, which uses this technology. Refer to ATA for more information.

⇒ See also ATA; EIDE; HARD DISK DRIVE; INTERFACE; SCSI; ST-506 INTERFACE.

identifier Same as NAME. The term *identifier* is usually used for variable names.

⇒ See also NAME; VARIABLE.

IE Short for *Internet Explorer*.

IEEE Abbreviation of *I(nstitute) of E(lectrical) and E(lectronics) E(ngineers)*, pronounced *I-triple-E*. Founded in 1884, the IEEE is an organization composed of engineers, scientists, and students. The IEEE is best known for developing standards for the computer and electronics industry. In particular, the IEEE 802 standards for local-area networks are widely followed.

⇒ See also ETHERNET; FLOATING-POINT NUMBER; GIGABIT ETHERNET; IEEE 802 STANDARDS; NETWORK; TOKEN-RING NETWORK.

IEEE 1394 A new, very fast external bus standard that supports data transfer rates of up to 400 Mbps (400 million bits per second). Products supporting the 1394 standard go under different names, depending on the company. Apple, which originally developed the technology, uses the trademarked name *FireWire*. Other companies use other names, such as *I-link* and *Lynx*, to describe their 1394 products.

A single 1394 port can be used to connect up to 63 external devices. In addition to its high speed, 1394 also supports *isochronous data*—delivering data at a guaranteed rate. This makes it ideal for devices that need to transfer high levels of data in real-time, such as video de-

ing manufacturers of Intel-compatible chips are Cyrix and AMD.

⇒ See also ALPHA PROCESSOR; AMD; BUS; CLOCK SPEED; CYRIX; INTEL; MERCED; MICROPROCESSOR; MMX; MULTITASKING; OVERDRIVE; PENTIUM II; PENTIUM MICRO-PROCESSOR; PENTIUM PRO; REGISTER; RISC; TRITON; VIRTUAL MEMORY; WINTEL.

interactive Accepting input from a human. Interactive computer systems are programs that allow users to enter data or commands. Most popular programs, such as word processors and spreadsheet applications, are interactive.

A noninteractive program is one that, when started, continues without requiring human contact. A compiler is a noninteractive program, as are all batch processing applications.

⇒ See also BATCH PROCESSING.

interface *n* 1. Something that connects two separate entities. For example, a *user interface* is the part of a program that connects the computer with a human operator (user).

There are also interfaces to connect programs, to connect devices, and to connect programs to devices. An interface can be a program or a device, such as an electrical connector. —*v* 2. To communicate. For example, two devices that can transmit data between each other are said to *interface with each other*. This use of the term is scorned by language purists because *interface* has historically been used as a noun.

⇒ See also USER INTERFACE.

interlacing 1. A display technique that enables a monitor to provide more resolution inexpensively. With interlacing monitors, the electron guns draw only half the horizontal lines with each pass (for example, all odd lines on one pass and all even lines on the next pass). Because an interlacing monitor refreshes only half the lines at one time, it can display twice as many lines per refresh cycle, giving it greater resolution. Another way of looking at it is that interlacing provides the same resolution as noninterlacing, but less expensively.

A shortcoming of interlacing is that the reaction time is slower, so programs that depend on quick refresh rates (animation and video, for example) may experience flickering or streaking. Given two display systems that offer the same resolution, the noninterlacing one will generally be better. 2. Preparing a graphic image so that alternating rows are displayed in separate passes. Interlaced images give a nice effect because the entire image is displayed quickly and then details are filled in gradually. They are especially prevalent on the World Wide Web because of the slow transmission speed. Web pages with interlaced GIFs appear in a browser more quickly than pages with normal GIF images. The interlaced GIFs look blurry at first but then become sharp as the rows are filled in.

⇒ See also CRT; MONITOR; REFRESH; RESOLUTION.

interleave To arrange data in a noncontiguous way to increase perfor-

(2)

Notes

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soft In computer science, *soft* is used to describe things that are intangible. For example, you cannot touch *software*. It's like music—you can see musical scores and touch CDs and tapes, but the music itself is intangible. Similarly, you can see software instructions (programs), and touch floppy disks on which the programs are stored, but the software itself is intangible.

Soft is also used to describe things that are easily changed or impermanent. In contrast, *hard* is used to describe things that are immutable.

⇒ See also HARD; HARDWARE; SOFTWARE.

soft font A font that is copied from a computer's disk to a printer's memory. Soft fonts can be erased, unlike *resident fonts* (fonts that are built into the printer) or fonts in font cartridges.

Soft fonts are generated by a font program in the computer. You can control the program to specify the font size and other characteristics. The disadvantages of soft fonts are that they require a lot of disk space and printer memory (from 10K to more than 200K for a single font), and it takes time to download the fonts to the printer.

Soft fonts are also called *downloadable fonts*.

⇒ See also DOWNLOAD; FONT; FONT CARTRIDGE; LASER PRINTER; RESIDENT FONT.

soft hyphen See under HYPHENATION.

soft return The term *return* refers to moving to the beginning of the next line in a text document. Word processors utilize two types of returns: *hard* and *soft*. In both cases, the return consists of special codes inserted into the document to cause the display screen, printer, or other output device to advance to the next line.

The difference between the two types of returns is that soft returns are inserted automatically by the word processor as part of its word wrap capability. Whenever too little room remains on the current line for the next word, the word processor inserts a soft return. The position of soft returns automatically changes, however, if you change the length of a line by adding or deleting words, or if you change the margins.

A hard return, on the other hand, always stays in the same place unless you explicitly delete it. Whenever you press the Return or Enter key, the word processor inserts a hard return. Hard returns are used to create new paragraphs or to align items in a table.

⇒ See also HARD RETURN; MARGINS; WORD WRAP.

software Computer instructions or data. Anything that can be stored electronically is software. The storage devices and display devices are hardware.

The terms *software* and *hardware* are used as both nouns and adjectives. For example, you can say, "The problem lies in the software," meaning that there is a problem with the program or data, not with the computer itself. You can also say, "It's a software problem."

The distinction between software and hardware is sometimes confusing

because they are so integrally linked. Clearly, when you purchase a program, you are buying software. But to buy the software, you sometimes need to buy the disk (hardware) on which the software is recorded.

Software is often divided into two categories:

systems software: Includes the operating system and all the utilities that enable the computer to function.

applications software: Includes programs that do real work for users. For example, word processors, spreadsheets, and database management-systems fall under the category of applications software.

⇒ See also APPLICATION; BLOATWARE; DATA; FIRMWARE; HARDWARE; PROGRAM; SYSTEMS SOFTWARE; VAPOKWARE.

software development kit See SDK.

software engineer A programmer. The term implies that the individual is more involved with design and management than with actual coding. But in reality, every good programmer is a software engineer because software engineering is required in all aspects of program development. Large applications, however, generally require more emphasis on software engineering aspects than small programs.

⇒ See also PROGRAMMER; SOFTWARE ENGINEERING.

software engineering The computer science discipline concerned with developing large applications. Software engineering covers not only the technical aspects of building software systems but also management issues, such as directing programming teams, scheduling, and budgeting.

⇒ See also COMPUTER SCIENCE; FUNCTIONAL SPECIFICATION; SOFTWARE ENGINEER; UML.

software licensing Allowing an individual or group to use a piece of software. Nearly all applications are licensed rather than sold. There are a variety of different types of software licenses. Some are based on the number of machines on which the licensed program can run, whereas others are based on the number of users that can use the program. Most personal-computer software licenses allow you to run the program on only one machine and to make copies of the software only for backup purposes. Some licenses allow you to run the program on different computers as long as you don't use the copies simultaneously.

⇒ See also APPLICATION; COPY PROTECTION; EULA; SHAREWARE.

software modem A modem implemented entirely in software. Software modems rely on the computer's processor to modulate and demodulate signals.

⇒ See also HOST-BASED MODEM; MODEM.

Exhibit T

To

Joint Claim Chart

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Adaptive Differential Pulse Code Modulation 17

In practice, that means Microsoft Windows and the Mac OS, the only operating systems that currently support OLE.

activity light On the front panel of a computer's case, a small colored light that flickers when a hard or floppy disk drive is reading or writing data. This light is often labeled HDD, which stands for hard disk drive.

actuator See *head actuator*.

Ada A high-level programming language developed by the U.S. Department of Defense and required by the DoD for all military programming applications. Ada uses the principles of structured programming, including the use of program modules that can be compiled separately. Ada programs are designed to be highly readable so they're easy to maintain. Recent versions include ADA++, an object-oriented version of ADA, and ADA 95, the most recent version. See *compiler, high-level programming language, Modula-2, object-oriented programming language, Pascal, and structured programming*.

adapter 1. A circuit board that plugs into an expansion slot in a computer, giving the computer additional capabilities. Popular adapters for personal computers include video adapters that produce video output, memory expansion boards, internal modems, and sound boards. Synonymous with *card* and *expansion board*.

2. A transformer that enables a computer or peripheral to work with line voltage that differs from its electrical requirements.

adapter segment See *upper memory area (UMA)*.

adaptive answering In modems, a feature that enables a fax modem to determine whether an incoming call contains a fax or computer data and pass control to the appropriate program.

Adaptive Differential Pulse Code Modulation (ADPCM) In multimedia, a method of digital waveform compression where the difference between successive samples (rather than their actual values) is encoded. Using ADPCM, the quantity of audio information that can be stored on a single CD-ROM increases from 1 hour to about 16 hours, while maintaining or improving fidelity. ADPCM is the storage technique used by CD-ROM/XA certificate authority (CA), and Compact Disc-Interactive (CD-I) disks.

hardware panning 239

hard return In word processing programs, a line break created by pressing the Enter key, as opposed to a soft return, which a program creates automatically at the end of a line. Unlike a soft return, a hard return stays in place when you insert and delete text.

hard space In word processing programs, a space specially formatted as a regular character so that the text can't start a new line, breaking the phrase, at the space's location. Hard spaces often are used to keep two-word proper nouns or month and date together on the same line, such as **Key Biscayne**, [hard space] **West Point**, and **January** [hard space] **25**.

hardware The electronic components, boards, peripherals, and equipment that make up your computer system; distinguished from the programs (software) that tell these components what to do. Compare to *firmware* and *software*.

hardware cache A buffer on a disk drive controller or a disk drive. The buffer stores frequently accessed program instructions and data, as well as additional tracks of data that a program might need next. A computer can access required data much more quickly from the hardware cache than from the disk. The data is then delivered as fast as the expansion bus can carry it. Both 32-bit and 16-bit cached disk controller cards are available. See *disk drive controller*.

hardware flow control Physical modem circuits that implement an error-correction protocol, such as MNP4 or V.42. The alternative (found in less expensive modems) is software error control, which requires the computer's central processing unit (CPU) to monitor the data stream for errors.

hardware handshaking In a serial data communications device such as a modem, a method of synchronizing two devices in a communications channel by means of separate physical circuits, which are used to send signals indicating that a device is ready to receive data. Compare software handshaking, in which this task is performed by inserting information into the data stream. See *CTS/RTS*.

hardware MPEG support Circuitry built into a computer to improve MPEG video playback speed and quality.

hardware panning A video adapter feature that enables it to simulate a display larger than the one to which the video adapter

242 Hayes command set

Hayes command set A standardized set of instructions used to control modems, introduced by Hayes, a pioneering modem manufacturer. Common Hayes commands include the following:

AT	Attention (used to start all commands)
ATDT	Attention, dial-in tone mode
ATDP	Attention, dial-in pulse mode
+++	Enter the command mode during the communication session
ATH	Attention, hang up

Hayes-compatible modem A modem that recognizes the Hayes command set.

HDD An acronym for hard disk drive frequently used in advertisements. The activity light on a PC is sometimes labeled HDD, because that light flashes when the hard disk is reading or writing.

HDTV Acronym for High Definition Television. A digital television standard, part of the U.S. Federal Communication Commission's Advanced TV standard, that enables television stations to broadcast high-resolution video with CD-quality sound. To receive HDTV signals, an HDTV-compatible TV is required.

head See *read/write head*.

head access aperture The opening in a floppy disk's shell that enables the read/write head to work with the recording medium. In 3 1/2-inch floppy disks, a sliding metal shutter covers the head access aperture, but 5 1/4-inch disks expose the head access aperture whenever the disk is out of its protective sleeve.

head actuator In a disk drive, a mechanism that moves the assembly containing the read/write heads across the surface of the disk to the location where data is to be written or read. See *random access* and *sequential access*.

head arm In a disk drive, a rigid mechanical rod with a read/write head flexibly connected at one end and attached to a single moving assembly on the other end. Several head arms, one for each side of each platter in a hard disk, are attached to the same assembly so that they can move as a unit. See *hard disk*.

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258 IBM Blue Lightning

IBM Blue Lightning A 32-bit microprocessor, introduced in 1993, that was functionally identical to the Intel 486DX4.

IBM PC-compatible Able to run all or almost all the software developed for the IBM Personal Computer, and accepts the IBM computer's cards, adapters, and peripheral devices.

ICCP See *Institute for Certification of Computer Professionals*.

ICMP See *Internet Control Message Protocol*.

icon In a graphical user interface (GUI), an on-screen symbol that represents a program, data file, or some other computer entity or function. Several icons might appear together on an icon bar, an on-screen row of buttons, usually placed just above the document window, that enables the user to choose frequently accessed menu options without having to use the menus. On each button is an icon that shows the button's function. For example, the Print button might display a tiny picture of a printer.

icon bar In an application a row of buttons that can be pressed to initiate commands. Synonymous with *toolbar*.

ICQ Pronounced "I seek you." A popular buddy list service that informs you when your Internet friends are online. You can then exchange messages via text chatting. A competing service is America Online's Instant Messenger.

IDE A hard disk interface standard for 80286, 80386, 80486, and Pentium computers that offers high performance at low cost. The IDE standard transfers most of the controller electronics to the hard disk assembly. For this reason, the IDE interface can be contained on the computer's motherboard; no controller card or expansion slot is necessary. See *IDE drive*.

IDEA See *International Data Encryption Algorithm*.

IDE drive A hard disk that contains most of the control circuitry within the drive itself. Synonymous with AT Attachment drives, IDE drives combine the speed of ESDI drives with the integration of the SCSI hard drive interface. This performance is offered at a price lower than most ESDI and SCSI drives.

identifier In database management, a descriptor used to specify the uniqueness of the information contained in the data record. For example, in a database of travel films, the descriptor

272 Intelligent Transportation System

Intelligent Transportation System See *ITS*.

Intel Pentium See *Pentium, Pentium Pro, Pentium II*.

interactive Able to engage in a dialogue with the user, generally by means of a text-based interface.

interactive processing A method displaying the computer's operations on a monitor so the user can catch and correct errors before the processing operation is completed.

interactive videodisk A computer-assisted instruction (CAI) technology that uses a computer to provide access to up to two hours of video information stored on a videodisk. Like CD-ROM, videodisks are read-only optical storage media, but are designed for the storage and random access retrieval of images, including stills and continuous video. You need a front-end program to access the videodisk information. With a videodisk of paintings in the National Gallery of Art, the user can demand, "Show me all the Renaissance paintings that depict flowers or gardens," and be led through a series of vivid instructional experiences while retaining complete control.

Inter-Application Communication (IAC) In the Macintosh System 7, a specification for creating hot links and cold links between applications.

interface 1. The connection between two hardware devices, between two applications, or between different sections of a computer network. 2. The portion of a program that interacts with the user.

interface standard A set of specifications for the connection between the two hardware devices, such as the drive controller and the drive electronics in a hard disk. Common hard disk interface standards in personal computing include ST506, ESDI, and SCSI. Other standards exist for connections with serial and parallel ports, such as the Centronics interface. See *ST-506/ST-412*.

Interior Gateway Protocol An Internet standard (protocol) that governs the routing of data within an autonomous system (AS)—a network or group of networks that is under a single administrator's control.

interlaced See *interlacing*.

492 soft page break

improve the kerning of the line. Synonymous with *optional hyphen*. See *hard hyphen*.

soft page break In a word processing program, a page break that the program inserts based on the current format of the text. This page break could move up or down if you insert or delete text or change margins, page size, or fonts. See *forced page break*.

soft return In a word processing program, a line break that the program inserts to maintain the margins. The location of soft returns changes automatically if you change the margins or insert or delete text. See *hard return* and *word wrap*.

soft-sectored disk A disk that, when new, contains no fixed magnetic patterns of tracks or sectors. Tracks and sectors are created during formatting.

soft start See *warm boot*.

software A computer program or programs, in contrast to the physical equipment on which programs run (hardware). Simultaneously singular and plural, the word compels some speakers to add the redundant "software program" or "software programs" in an attempt to clarify the noun's number. Software is conventionally divided into two categories, system software (programs needed to operate the computer) and application programs (programs that enable users to perform tasks using the computer). See *firmware* and *hardware*.

software cache A large area of random-access memory (RAM) that a program, such as SMARTDRV.EXE, sets aside to store frequently accessed data and program instructions. A 1MB to 2MB software cache can speed up disk-intensive applications such as database management programs.

software compatibility The capability of a computer system to run a specific type of software. The Commodore 64, for example, isn't software-compatible with software written for the Apple II, even though both computers use the MOS Technology 6502 microprocessor.

software engineering An applied science devoted to improving and optimizing the production of software.

software error control An error-correction protocol that resides partly or entirely in a communications program rather

552 VESA bus

VESA bus See *local bus* and *VESA local bus*.

VESA local bus A local bus design designed to work with the Intel 80486 and provide a standard to compete with incompatible proprietary local buses. VESA local bus adapters typically are used to connect video adapters and network adapters to the expansion bus.

VESA local bus slot A socket for adapters found on expansion buses compatible with the VESA local bus standard. VESA local bus slots provide 32-bit communication between the microprocessor and adapters, and were common in computers based on various versions of the 486-class microprocessor. However, PCI slots are much more flexible than VESA local bus slots and are expected to be the standard used for the next several years. See *ISA* and *ISA slot*.

V.Fast Class (V.FC) A proprietary modulation protocol used by several modem manufacturers before the V.34 standard was published. Most V.FC modems can be upgraded to comply fully with V.34.

V.FC See *V.Fast Class*.

VGA Acronym for Video Graphics Array. A color bit-mapped graphics display standard, introduced by IBM in 1987 with its PS/2 computers. VGA video adapters and analog monitors display as many as 256 continuously variable colors simultaneously, with a resolution of 640 pixels horizontally by 480 lines vertically. VGA circuitry is downwardly compatible with all previous display standards, including Color Graphics Adapter (CGA), monochrome display adapter (MDA), and Enhanced Graphics Adapter (EGA).

VHL See *very high-level language*.

vi A text editor that is configured to be the default editor on many Unix systems. Notoriously difficult to learn, vi has little in common with Macintosh and Microsoft Windows 95/98 word processing programs. To avoid vi, many Unix users prefer to use applications that have their own built-in text editors, such as the e-mail program pine. See *emacs*.

video accelerator See *graphics accelerator board*.

video adapter The adapter that generates the output required to display text and graphics on a monitor.